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The Combined Incidence of Taxes and Public Expenditures in the Philippines

Shantayanan Devarajan
Shaikh I. Hossain

In the Philippines, the combined effect of taxation and spending policies is progressive, because the incidence pattern of spending is progressive while that of taxation is neutral. Indirect taxes, the main source of government revenue, are only slightly regressive. Although the poor consume taxed goods such as energy directly, the rich consume them indirectly by purchasing goods whose production requires energy and other taxed goods

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Summary findings

Incidence studies of fiscal policy in developing countries typically examine either the distribution of tax burdens or the incidence of public expenditures. But the central issue for policymakers is the combined or net incidence of fiscal activities.

Even if a tax is regressive, the impact of increasing it may not be, if the revenue raised is spent in a progressive manner. But even if the beneficiaries of public spending are the poor, the net effect may not be pro-poor, if the spending is financed by a highly regressive tax.

One reason that combined incidence studies are so rare: they require detailed data on both taxation and public spending. Most analysts consider themselves lucky if they have data on either.

Devarajan and Hossain show that the net incidence of fiscal policy in a country with average data — the Philippines — can be estimated using a variety of data sources and tools, using simplifying assumptions.

For 20 years, the Philippine economy has experienced a series of balance of payments crises triggered by fiscal crises. It has had an unsatisfactory record of poverty alleviation. As the government tries to maintain fiscal discipline by raising taxes and cutting spending, how will poverty be affected? Devarajan and Hossain examine net fiscal incidence to find out. Their findings:

- The incidence pattern of taxes is basically neutral. Contrary to expectations, indirect taxes are only slightly regressive. The poor consume taxed goods such as energy directly, but the rich consume them indirectly by purchasing goods the production of which requires energy and other taxed goods.
- It is the pattern of expenditures that drives the combined incidence, which is progressive.

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Shantayanan Devarajan

and

Shaikh I. Hossain

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THE COMBINED INCIDENCE OF TAXES AND PUBLIC EXPENDITURES IN THE PHILIPPINES

by

Shantayanan Devarajan

Shaikh I. Hossain

I. Introduction

Studies of the incidence of fiscal policy in developing countries typically examine either the distribution of tax burdens (e.g., Ahmad and Stern 1989, Shah and Whalley 1991), or the incidence of public expenditures (e.g., Meerman 1978, Selowsky 1979, van de Walle and Nead 1995). Yet the central issue for policymakers is the combined or net incidence of fiscal policy. For even if a tax is regressive, the overall impact of increasing it may not be, if the revenue raised is spent in a progressive manner. Conversely, while the beneficiaries of public spending may be the poor, if this spending is financed by a highly regressive tax, the net effect may not be pro-poor.

One reason why combined fiscal incidence studies are so rare is that they require detailed data on *both* taxation and public expenditures. Most analysts consider themselves fortunate if they have data on either. The purpose of this paper is to show that the net incidence of fiscal policy in a country with average data -- the Philippines -- can be estimated using a variety of data sources and tools. Needless to say, we make numerous simplifying -- some would say heroic -- assumptions, draw on different data sources and put the available tools to creative use. Nevertheless, a fairly robust picture of the net incidence of taxes and expenditures in the Philippines emerges. Furthermore, the pattern of incidence that we find has important implications for Philippine economic policy. During the past 20 years, the Philippines has been characterized by a series of balance of payments crises, triggered by fiscal crises, and an unsatisfactory record of poverty alleviation. As the government attempts to maintain fiscal discipline by

raising taxes and cutting expenditures, how will poverty be affected? The answer lies in the net incidence of fiscal policy in the Philippines, which is the subject of this paper.

Section II of the paper provides a brief overview of the different methods we use to estimate the combined incidence of taxes and expenditures in the Philippines. Section III presents our results. Section IV contains some concluding remarks.

II. Methodology

The analysis of tax incidence captures the effects of both direct and indirect taxes. Direct taxes include income and business taxes, while indirect taxes encompass excise, import tariffs, and value added taxes (VAT). The analysis of expenditure incidence captures three major categories that have significant distributional implications in the Philippines: infrastructure, health, and education.

Tax Incidence

Direct Taxes

Since, like many developing countries, the Philippines has low collection rates, this paper considers the effective tax rate--tax revenue divided by the base--as opposed to statutory rates. Accordingly, the Bureau of Internal Revenue's (BIR) actual tax collections for 1988 and 1989 by gross income bracket form the basis for our tax incidence analysis. To map income classes into deciles, we use the 1988 Family Income and Expenditure Survey (FIES), which gives the number of families in each income class, albeit at a coarser degree of disaggregation than we use herein.

Indirect Taxes

We examine two effects of indirect taxes. The first is the "cascading," or interindustry, effect. For example, an excise tax on oil gets passed on to all users of oil, so that consumers of goods whose production uses oil end up paying part of the tax. The second indirect effect is the impact of a tax on the price of substitutes for the taxed good. For instance, an import tariff raises the price of import substitutes. Thus, consumers of the substitute good suffer a drop in their real income from the price increase, even

though they are not paying any of the original tax. For incidence analysis, these two effects of indirect taxes can be important and often dominate the effects of direct taxes. We incorporate both in our analysis by undertaking a general-equilibrium analysis of indirect taxation. It is noteworthy that the second type of indirect tax effect--the impact of a tax on the price of substitute goods--does not entail a payment by consumers to the government; rather, the payment will be the higher prices paid by consumers to producers of substitute goods. As a result, the incidence of a tax calculated with this method reflects both actual tax collections and the increased costs associated with each tax.

Expenditure Incidence

Here we focus on three expenditure categories that have significant distributional implications in the Philippines: infrastructure, health, and education. There are at least two distinct ways to measure the incidence of public expenditures (for a survey, see Selden and Wasylenko, 1991). One, known as "expenditure incidence studies," examines how government expenditures increase the income of different individuals in the economy (schoolteachers, doctors, construction workers, and so forth) and then determines where in the income distribution these people lie. The other approach, called "benefit incidence," considers the services provided by public expenditures--education, health care, infrastructure, etc.--and examines how different income classes, or deciles, use these services. This was the approach adopted in the pioneering studies of Meerman (1979) and Selowsky (1979). This paper adopts the benefit incidence approach as well.

Given the dearth of data on the access of households to the public services supported by these expenditures, we apply an indirect method for obtaining the incidence of public spending: we look at the regional pattern of expenditures which, combined with information on income distribution within each region, yields inferences about the nationwide incidence pattern.[1]

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[1] We use the 1988 FIES to apply income intervals corresponding to the national deciles to the population of each region, and thus obtain the percentage of households in each of the intervals. We then assume that the benefits from public expenditures in a region are distributed uniformly. In part, this assumption is justified by the idea that many infrastructure projects yield a public-good whose benefit is shared equally by everyone.

We use access data as indicators of the incidence of expenditures for education and health. For education expenditures, we use primary and secondary school enrollment rates; for health expenditures, we use hospital and clinic utilization rates.

III. Results and Discussion

Taxes

Direct Taxes

Income taxes. According to a recent study, the income tax collection rate in the Philippines is very low; only about 50 percent of potential income taxes are collected (World Bank 1992). Thus, while the statutory rates reflect a progressive tax, the effective rates may not. Table 1 shows the Bureau of Internal Revenue's estimate of actual tax collections for 1988 and 1989 by gross-income bracket. The effective tax rates (the ratio of tax payments to gross income) rise quite steeply with income. However, Table 1 breaks taxpayers down by income classes (or brackets) rather than by deciles. Quite simply, the number of households in each income class is by no means the same. Table 3 maps income classes into deciles based on FIES 1988, which gives the number of families in each income class. The resulting effective tax rates by decile are shown in columns 2 and 3 of Table 3. The apparent progressivity of the income tax is dampened when expressed in terms of deciles rather than income brackets. The reason for that effect is that the income classes that pay the highest tax rates (more than 10 percent) comprise only a small fraction of the Philippine population. They are averaged in with those who pay lower tax rates when we consider the highest decile of the population. The effective tax rates by decile can be compared with Manasan's (1990) estimates of the potential income tax rates by decile (Table 3, column 4). While the potential tax rates are significantly higher, the degree of progressivity is not much greater. In the Philippines, tax avoidance and evasion are evidently largely the province of the rich. Hence, if the government increased its efforts at tax collection, it would surely improve the income distribution in the country, as well as provide much needed revenue.

Table 1. Tax Collection by Gross-Income Categories
(in pesos)

Income bracket	1988						1989					
	No. of Tax-payers	Gross income	Exemp-tions	Taxable income	Tax due	Effect ive tax rate	No. of Tax-payers	Gross income	Exemp-tions	Taxable income	Tax due	Effect ive tax rate
<2,000	6254	3229	109171					772	3256277			
2-4,000	6304	19759	98356					5696	25366			
4-6,000	10488	53750	163899				6236	38759	84384			
6-8,000	13522	96405	208156									
8-10,000	20215	185178	314371				4834	43979	63767			
10-12,000	28120	314656	427063	12721			6672	74147	87753	3444		
12-15,000	57858	790663	871423	102227	252	0	18088	248573	228047	46033	124	0.00
15-20,000	176658	3182259	2827056	694240	8182	0	55960	997771	720888	315053	3799	0.00
20-30,000	467742	11682920	6502209	5226095	174117	0.01	243338	6212767	3165338	3052704	105959	0.02
30-50,000	631727	23398588	9689531	13717110	745889	0.03	503884	19374077	7653536	11721181	663108	0.03
50-60,000	121143	6634433	1949900	4685558	366938	0.06	103172	5628882	1610709	4018292	316101	0.06
60-100,000	226617	17039643	3814455	13226838	1363581	0.08	199072	15166830	3361214	11805708	1227191	0.08
100-150,000	55348	6269432	932587	5336862	726944	0.12	70561	8499899	1208477	7291422	1038354	0.12
150-180,000	27319	3925195	470567	3454628	547069	0.14	17139	2803319	297025	2506294	424550	0.15
180-200,000	18454	3278093	321037	2957055	519161	0.16	7294	1382144	128455	1253689	225574	0.16
200-300,000	16235	3870904	280835	3590068	696432	0.18	15003	3559561	265840	3293721	637610	0.18
300-500,000	6681	2482116	112790	2369325	534610	0.22	5438	2015638	94192	1921445	433096	0.21
500-1,000,000	2710	1803318	44157	1759160	472679	0.26	1635	1022483	27308	995125	262016	0.26
>1,000,000	994	3394419	15731	3378688	1130033	0.33	253	992210	4246	987964	332422	0.34

Source: Bureau of Internal Revenue.

Table 2. Effective Tax Rates by Income Class
(in pesos)

Income class	Number of families	1988 Average income	1988 Gross income	1988 Tax due	1988 Effective tax rate	1989 Average income	1989 Gross income	1989 Tax due	1989 Effective tax rate
< 6,000	179240	44625	7998585	0	0	49351	8845635	0	0
6-10,000	632703	8254	5222330	0	0	9128	5775375	0	0
10-15,000	14183339	12640	17927804	252	0	13979	19826359	124	0
15-20,000	1412363	17467	24669744	8182	0	19317	27282270	3799	0
20-30,000	2265258	24629	55791039	174117	0.003	27237	61699310	105959	0.002
30-40,000	1382995	34694	47981628	372944	0.008	38368	53062882	331554	0.006
40-60,000	1476584	48749	71981993	739882	0.010	53912	79604886	647655	0.008
60-100,000	1109936	75385	83672525	1363581	0.016	83368	92533445	1227191	0.013
> 100,000	656509	179092	1.2E+08	4626928	0.039	198058	1.3E+08	3353622	0.026

Source: FIES, Bureau of Internal Revenue.

Table 3. Effective Tax Rates by Decile
(tax paid as a share of gross income)

Decile	1989	1988	1987	Potential
I	0.000	0.000	0.000	0.000
II	0.000	0.000	0.000	0.000
III	0.000	0.000	0.000	0.000
IV	0.001	0.002	0.000	0.000
V	0.002	0.003	0.003	0.000
VI	0.004	0.006	0.004	0.000
VII	0.008	0.010	0.006	0.002
VIII	0.008	0.010	0.009	0.006
IX	0.010	0.012	0.019	0.031
X	0.018	0.025	0.033	0.094

Source: Columns 2 and 3: authors' calculations; column 4: Manasan (1990).

Other estimates of income tax progressivity in the Philippines largely stratify the population by income class (Yoingco 1989 and Corcoran 1991). Not surprisingly, they reveal much higher effective tax rates for the top income bracket (around 7 percent), but for the reasons discussed earlier they are not directly comparable with the preceding estimates.

Business taxes. The incidence of effective business tax rates is estimated in a manner analogous to income taxes. We use the FIES data to map the BIR's tax collections by income bracket into taxes paid by deciles (Table 4). We then compute the effective tax rates by decile (Table 5). Note that while the pattern of effective tax rates is quite progressive, the levels are extremely low. Even the richest 10 percent of the population pay less than two-tenths of 1 percent of their income in business taxes. There appears to be a fair amount of room for increasing business tax collections, which will in turn be equity-improving.

Table 4. Effective Tax Rates on Business Income by Income Class

	1989					
Income bracket	Number of taxpayers	Gross income	Exemptions	Taxable income	Tax due	Effective tax rate
<2,000	155390	477	2958551			
2-4,000	676	2126	12418			
4-8,000	2154	13165	40074			
8-10,000	1207	11258	23760			
10-12,000	1383	15662	26395	313		
12-15,000	1818	25059	35495	1102	3	0.00
15-20,000	3220	57396	63695	5596	60	0.00
20-30,000	7244	182901	117732	66025	1907	0.01
30-50,000	16406	644139	262479	381660	21448	0.03
50-60,000	4655	254345	72658	181686	14233	0.06
60-100,000	9853	765578	160718	604859	64212	0.08
100-150,000	4882	590693	80223	510460	73127	0.12
150-180,000	1421	233099	23007	210092	35750	0.15
180-200,000	658	124808	10805	114003	20566	0.16
200-300,000	1621	387737	26025	361712	70354	0.18
300-500,000	757	283504	12057	271447	61441	0.22
500-1,000,000	216	135615	3402	132213	34874	0.26
>1,000,000	46	139358	655	138702	46115	0.33

Table 5. Incidence of Business Taxes

Decile	Effective Tax Rate
I	0.0000
II	0.0000
III	0.0000
IV	0.0000
V	0.0000
VI	0.0001
VII	0.0003
VIII	0.0003
IX	0.0005
X	0.0016

Source: Authors' calculations.

Indirect Taxes

The Philippine government relies on indirect taxes for about 70 percent of its revenue. This fact alone explains why the tax system has been considered regressive. Since they are levied on transactions, indirect taxes can hurt the poor more than they do the rich, insofar as the former spend a larger fraction of their income than the latter. Furthermore, it is felt that some individual taxes in the Philippines--the excise tax on oil, for example--are particularly regressive because the poor spend a larger share of their income on them than do the rich.

As pointed out earlier, we must examine the effects of each tax on prices to determine the incidence of indirect taxes in the Philippines. We do so by simulating the removal of each type of tax with a multisector, computable general equilibrium (CGE) model of the Philippine economy (Go 1991).[2] The model solves for market-clearing prices and quantities that are consistent with the individual optimizing behavior of consumers and producers, a given set of world prices, and the policy environment. Four features of the model are worth bearing in mind when interpreting the results. First, the model captures the fact that, in the Philippines,

[2] For an early attempt at using a CGE model for tax-incidence analysis, see Devarajan et al. (1981). Shah and Whalley (1992) note that general-equilibrium tax incidence studies of developing countries have been somewhat rare, although Habito (1984) and Mitra and Tendulkar (1987) are notable exceptions.

imports and domestic goods in the same sector are imperfect substitutes. Therefore, when a 10 percent tariff is removed, the domestic price of the substitute drops by less than 10 percent. The implication is that the effective tax rate paid by consumers of food, say, is somewhat less than the tariff rate on food. Second, the model includes interindustry ("cascading") transactions through the input-output table. Thus, an excise tax on oil, for example, ends up being a tax not just on final energy consumption, but also on other final goods that use oil at some stage in their production. This will have important implications for the burden of indirect taxation. Third, the tax rates that are used in the model are effective tax rates--that is, the actual revenue from a tax divided by its base. In this way, our calculations are consistent with those for direct taxes. Fourth, in simulating the removal of individual indirect taxes, we assume they are replaced by an income tax that preserves government revenue. Thus, we are examining the "true" price-distorting effects of the tax, rather than combining them with those generated by macroeconomic imbalances. In order to make the calculation of the indirect-tax burden comparable with that of direct taxes, we add to the burden induced by the price-distortions the proportional income tax required to preserve government revenue. Since the income tax is proportional, it does not distort the pattern of indirect-tax incidence.

Having simulated the price effects of eliminating a particular tax, we examine how much of income each household income class spends on the different commodities (Table 6). The expenditure pattern is based on the FIES. When combined with the price changes, the pattern determines the change in purchasing power induced by each tax for each income class. This is the effective direct and indirect tax paid by the representative household.

Table 6. Household Expenditure Shares by Income Class

	Total	<6,000	6-10,000	10-15,000	15-20,000	20-30,000	30-40,000	40-60,000	60-100,000	>100,000
Food	50.7	66.7	67.3	65.6	63.2	60.0	56.2	51.9	45.8	35.8
Alcohol	1.1	1.6	1.4	1.3	1.3	1.3	1.3	1.1	1.1	0.8
Tobacco	2.1	1.9	2.0	2.5	2.7	2.8	2.7	2.3	1.8	1.2
Fuel, light, water	5.2	7.9	6.9	6.4	6.1	5.6	5.2	5.1	5.0	4.7
Transportation-Comunication	4.7	2.1	2.3	2.6	2.8	3.2	3.5	4.1	4.7	7.9
Household operations	2.5	2.6	2.5	2.4	2.2	2.1	2.0	2.2	2.6	3.2
Personal care	3.3	1.8	2.3	2.7	3.0	3.2	3.4	3.5	3.5	3.3
Clothes, FTW	4.2	2.5	3.2	3.8	4.1	4.4	4.5	4.5	4.4	3.9
Education	2.9	0.5	0.8	1.0	1.4	1.6	2.2	3.0	4.0	4.1
Recreation	0.5	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.5	0.8
Medical	1.7	1.6	1.2	1.3	1.5	1.4	1.7	1.7	1.8	1.9
Nondurable furniture	0.4	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Durable furniture	1.8	0.1	0.1	0.2	0.3	0.8	1.6	1.9	2.6	2.9
Rent	11.7	8.0	6.8	6.5	6.6	7.9	9.0	11.0	13	18.2
Maintenance	1.1	0.7	0.7	0.9	1.0	1.1	1.0	1.2	1.3	1.1
Taxes	1.1	0.1	0.1	0.2	0.2	0.2	0.3	0.5	1.0	3.1
Miscellaneous	3.3	1.3	1.6	1.9	2.5	2.7	3.3	3.3	3.7	4.1
Other	1.8	0.3	0.3	0.5	0.6	0.8	1.3	1.8	2.6	2.8
Total	100.1	99.9	99.8	100.3	100.1	99.8	99.9	99.9	99.8	100.2

Source: FIES

Excise taxes. The first part of Table 7 presents the initial effective rates ("partial equilibrium") and the model-simulated rates ("general equilibrium") of the excise tax in the Philippines. The partial effects reflect the commonly accepted incidence pattern. Excise taxes of this nature are generally regressive, although other studies have found that the recent adaptations in the petroleum product tax rates have been sufficient to make the direct effect of these taxes progressive (Yoingco 1992). The general-equilibrium rate for utilities (fuel, electricity, and water) is three times higher than the partial-equilibrium one--due to the cascading effect mentioned earlier. Furthermore, while the excise tax is levied directly only on a few sectors, the general-equilibrium simulation reveals that the price of all sectors is affected by the tax. Again, this is due to the interindustry transactions captured by the model.

When these price changes are mapped into expenditure shares, the resulting burden is mildly progressive when the tax is computed as a percentage of expenditures (Table 7, bottom panel). The reason is that even though the poor spend a larger fraction of their income on utilities than do the rich, even an excise tax on oil ends up raising the prices for almost all goods, including those (primarily services) consumed intensively by the rich. The net effect of the excise tax reveals a burden that rises with income.

If these effective excise tax rates are compared with measured income, then the pattern is mildly regressive--but only because the poor consume a larger fraction of their income than do the rich. Also at issue is whether the data on expenditures are more reliable than those on income (both are from the FIES). There is some reason to believe that expenditure data are underreported in the FIES, and more so for the upper income brackets. In this case, the regressivity picked up in the last column of Table 7 would be dampened. Furthermore, expenditures may be a better proxy for permanent income, which should be the base for incidence calculations anyway. However, given that we used income as a base to calculate the burden of income taxes, we continue using the same base to calculate the incidence of indirect taxes, thus permitting aggregation across taxes.

Table 7. Excise Tax Rate
Effective Excise Tax Rates

	Partial equilibrium	General equilibrium
Food	0	0.004
Alcohol	0.034	0.05
Tobacco	0.034	0.05
Fuel, light, water	0.025	0.0784
Transportation & Communication	0	0.04
Household OPS	0	0.018
Personal care	0	0.018
Clothing and footwear	0.034	0.05
Education	0	0.018
Recreation	0	0.018
Medical	0	0.018
Nondurable furniture	0.034	0.05
Durable furniture	0.012	0.03
Rent	0	0.018
Maintenance	0	0.025

Table 7. Excise Tax Rate (continued)
Effective Excise Tax Rates by Decile

Decile	Tax as % of expenditure	Mean expenditure	Mean income	Tax as % of income
I	0.050	8904	8581	0.052
II	0.051	12913	12866	0.052
III	0.053	15858	16398	0.051
IV	0.054	18793	20179	0.051
V	0.056	22104	24329	0.050
VI	0.057	26172	29460	0.050
VII	0.058	31616	36482	0.050
VIII	0.060	39056	46774	0.050
IX	0.061	52209	64607	0.050
X	0.071	97580	144805	0.048

Import tariffs. As with excise taxes, and for the reasons cited earlier, the partial- and general-equilibrium import tariff rates diverge quite markedly (Table 8). On the one hand, the effective tariff rate on utilities doubles when general-equilibrium effects are incorporated, because the utility sector contains both oil (a tradable) and water and electricity (nontradables). Thus, the direct tariff payments of this sector are relatively small. Yet, even the nontradable parts of this sector consume oil, so that the cascading effect of the oil tariff is quite large. On the other hand, the effective general-equilibrium tariff on clothing and footwear is about one-third its partial-equilibrium value, given the imperfect substitutability between imported and domestic clothes and shoes in the Philippines.

The net result is an incidence pattern that is neutral when taken as a fraction of expenditures, and regressive as a fraction of income--the latter for the reason mentioned earlier.

Table 8. Import Tariff Rates
Effective Import Tariff Rates

	Partial equilibrium	General equilibrium
Food	0.126	0.073
Alcohol	0.295	0.109
Tobacco	0.295	0.109
Fuel, light, water	0.0476	0.0952
Transportation/ Communication	0	0.092
Household OPS	0	0.084
Personal care	0	0.084
Clothing and footwear	0.295	0.109
Education	0	0.084
Recreation	0	0.084
Medical	0	0.084
Nondurable furniture	0.295	0.109
Durable furniture	0.146	0.1
Rent	0	0.084
Maintenance	0	0.095

Table 8. Import Tariff Rates (continued)
Effective Import Tariff Rates by Decile

Decile	Tax as % of expenditure	Tax as % of income
I	0.115	0.119
II	0.116	0.116
III	0.117	0.113
IV	0.118	0.110
V	0.119	0.108
VI	0.120	0.107
VII	0.121	0.105
VIII	0.122	0.102
IX	0.124	0.100
X	0.132	0.089

Table 9. Value Added Taxes
Effective VAT Rates

	Partial equilibrium	General equilibrium
Food	0	0.013
Alcohol	0.039	0.033
Tobacco	0.039	0.033
Fuel, light, water	0	0.0086
Transportation/ Communication	0	0.017
Household OPS	0	0.015
Personal care	0	0.015
Clothing and footwear	0.039	0.033
Education	0	0.015
Recreation	0	0.015
Medical	0	0.015
Nondurable furniture	0.039	0.033
Durable furniture	0.039	0.029
Rent	0	0.015
Maintenance	0.039	0.04

Table 9. Value Added Taxes (continued)
Effective VAT Rates by Decile

Decile	Tax as % of expenditure	Tax as % of income
I	0.037	0.038
II	0.037	0.037
III	0.038	0.037
IV	0.040	0.037
V	0.040	0.036
VI	0.041	0.036
VII	0.042	0.036
VIII	0.042	0.035
IX	0.043	0.035
X	0.049	0.033

Value added tax. Although the value added tax (VAT) in the Philippines is based on the rebate method, data on the rebates paid out are unavailable. Therefore, the VAT is simulated here as a tax on the final consumption of the commodities (primarily consumer goods). The result is a dilution of the tax rate when its effects on prices are simulated (Table 9, panel 1). The incidence effects of this tax are practically neutral, except when the income-expenditure differential across deciles is taken into account. In this case, the tax is regressive, but not greatly so.

In sum, we find that the overall burden of indirect taxes in the Philippines falls more or less equally on the poor and the rich. This is true for total indirect taxes and for each of the components. The net result of the analysis of import tariffs and the VAT is an incidence pattern that is neutral when taken as a fraction of expenditures, and regressive as a fraction of income--the latter for the statistical reasons mentioned earlier. This finding is in sharp contrast to earlier estimates of the indirect-tax burden in the country (see, for example, World Bank, 1986) which concluded that the system was quite regressive. However, these earlier analyses did not examine the general equilibrium effects of indirect taxes. In fact, our results dispute some recent work on tax incidence in the Philippines (Corcoran 1991 and Manasan 1991) which, while conceding that the system is less regressive than in the past, still point to the regressive

nature of indirect taxes. Again, neither of these studies examines general-equilibrium effects which, as we showed, play a crucial role in dampening the regressivity of indirect taxes in the Philippines.

Consolidation

Table 10 presents the consolidated tax burden in the Philippines. Overall, the system is largely neutral, with all deciles effectively paying about 10 percent of their income in taxes. On the one hand, based on reported incomes by decile, the slightly regressive nature of the indirect taxes is sufficient to render the overall system mildly regressive, despite the progressive nature of direct taxes. The primary reason for its regressivity is the overwhelming importance of indirect taxes in the Philippine economy. But the difference in the tax rate paid by the highest and by the lowest deciles is just more than 1 percentage point. On the other hand, most of the regressivity in indirect taxes stems from the statistical divergence between expenditures and income that varies implausibly across deciles. Thus, if in defining tax incidence we used expenditures rather than income as our base for calculating burden, the indirect-tax pattern would be almost neutral, rendering the overall system progressive (Table 10, bottom panel).

Table 10. Distribution of Tax Burden
Income-Based

Decile	Income	Business	Excise	Tariffs	VAT	Total
I	0	0	0.052	0.119	0.038	0.208
II	0	0	0.052	0.116	0.037	0.205
III	0	0	0.051	0.113	0.037	0.201
IV	0.002	0	0.051	0.110	0.037	0.200
V	0.003	0	0.050	0.108	0.036	0.198
VI	0.006	0	0.050	0.107	0.036	0.199
VII	0.010	0	0.050	0.105	0.036	0.201
VIII	0.010	0	0.050	0.102	0.035	0.197
IX	0.012	0.001	0.050	0.100	0.035	0.197
X	0.025	0.002	0.048	0.089	0.033	0.196

Table 10. Distribution of Tax Burden
Expenditure-Based

Decile	Income	Business	Excise	Tariffs	VAT	Total
I	0	0	0.050	0.115	0.037	0.200
II	0	0	0.051	0.116	0.037	0.204
III	0	0	0.053	0.117	0.038	0.208
IV	0.002	0	0.054	0.118	0.040	0.215
V	0.003	0	0.056	0.119	0.040	0.218
VI	0.007	0	0.057	0.120	0.041	0.224
VII	0.012	0	0.058	0.121	0.042	0.232
VIII	0.012	0	0.060	0.122	0.042	0.236
IX	0.015	0.001	0.061	0.124	0.043	0.244
X	0.037	0.002	0.071	0.132	0.049	0.291

Public Expenditures

We now turn to the expenditure side of the ledger. As stated in the introduction, we focus on three components of the budget that have strong distributional effects: health, education, and infrastructure. Together, these account for about 30 percent of government expenditures, or 6 percent of GDP. In a country such as the Philippines, where health and education are provided overwhelmingly by the private sector, public expenditures in these two sectors will be targeted particularly at alleviating poverty. Moreover, while infrastructure expenditures are typically meant to release supply bottlenecks, they could have important distributional consequences in the Philippines, where the rural infrastructure is particularly weak, and where the majority of the poor live in rural areas.

Returning to the general case in which we use regional expenditure data to derive benefit incidence, we can infer for each expenditure category the implicit subsidy (expenditures per household as a fraction of average household income) that is associated with each of the 10 nationwide deciles in each region. The overall incidence of public expenditures in health, education, and infrastructure is a weighted average of the regional incidence, the weights being the regional allocations of these expenditures.

Table 11. Public Expenditures by Region
(in thousands of 1988 pesos)

Region	Health	Education	Infrastructure
NCR	148063	1685286	4093987
I	321047	686088	611187
II	215251	1251118	977986
III	402220	1818392	1214689
IV	603226	1079836	1791055
V	339864	1525578	885829
VI	339559	921344	783604
VII	319439	922158	668269
VIII	315742	736527	899791
IX	228044	765839	310566
X	285925	814766	629805
XI	278104	719522	673637
XII	178975	28712	303910
CAR	221947	191455	341923

Source: Budget Division, FMS.

Table 12 shows the incidence pattern across deciles as implied by this method of allocating public expenditures. The picture is clear: public expenditures have a beneficial effect on the distribution of income. Indeed, the pattern is strongly progressive, with the lowest decile receiving almost half of their income in benefits, and with the top 10 percent receiving virtually nothing. Of course, it should be noted that this result stems directly from our assumption that the benefits from expenditures in any region accrue uniformly throughout that region. It follows that the benefits would comprise a much higher fraction of the income of the lowest decile than of the highest decile. However, another reason is that public expenditures appear to be concentrated in regions that have a large share of the nation's poor. For example, in Region V (Bicol), some of the highest shares of its population fall in the nation's lowest decile, yet the region receives the third highest amount of expenditures on education and the fourth highest on infrastructure. Similarly, another region with a concentration of the nation's poor, Region IV (Southern Tagalog), receives the sixth highest amount of educational expenditures and the second highest infrastructural expenditure. Meanwhile, the National Capital

Region, which has the largest share of its population in the top decile, receives a large absolute amount of infrastructure and other spending, but, because it is also the most populous, has among the lowest per capita spending.

Table 12. Incidence of Public Expenditures
(benefits as a share of gross income)

Decile	Health	Education	Infrastructure
I	0.073	0.209	0.187
II	0.035	0.1	0.087
III	0.028	0.078	0.069
IV	0.023	0.062	0.059
V	0.02	0.051	0.051
VI	0.017	0.041	0.044
VII	0.015	0.034	0.038
VIII	0.012	0.025	0.032
IX	0.009	0.018	0.024
X	0.0002	0.0004	0.0005

Source: Authors' calculations.

As mentioned earlier, these calculations make no allowance for differences in utilization rates of these public services across income groups. Yet there is some evidence that in the Philippines the poor use educational services less (on a proportional basis) than do the rich (World Bank 1986). We now examine how this information modifies the incidence pattern derived above. (The only source of data on utilization rates by deciles is the 1982-83 Household and School Matching Survey, which lists enrollment rates by different age and income groups, as shown in Table 13). We combine these utilization data with data on total (that is, current and capital) expenditures on primary and secondary education to estimate the extent to which considerations of utilization rates modify our conclusions about the incidence of expenditures. The regional pattern of expenditures on primary and secondary education is provided in Table 14.

Table 13. Enrollment Rates by Age and Income Decile

Decile	Ages 7-10	Ages 11-12	Ages 13-14	Ages 15-16	Total
I	0.971	0.905	0.663	0.537	0.774
II	0.951	0.890	0.704	0.496	0.758
III	0.960	0.892	0.697	0.506	0.767
IV	0.978	0.933	0.771	0.603	0.822
V	0.984	0.945	0.881	0.646	0.866
VI	0.974	0.939	0.851	0.701	0.868
VII	0.990	0.938	0.833	0.727	0.875
VIII	0.990	0.968	0.885	0.693	0.886
IX	0.990	0.981	0.939	0.802	0.926
X	0.994	0.963	0.894	0.864	0.928

Source: World Bank, 1986.[3]

Table 14. Public Expenditures on Education, 1990
(in millions of 1990 pesos)

Region	Elementary	Secondary
NCR	1323.9	933.4
I	807.6	465.7
II	492.8	341.7
III	1118.4	494.1
IV	1709.5	620.9
V	944.2	390.5
VI	1192.5	808.0
VII	930.4	208.1
VIII	762.2	391.0
IX	706.7	216.4
X	786.9	283.9
XI	834.0	264.6
XII	737.4	208.7
CAR	283.0	165.7

Source: Budget Division, FMS.

[3] The original table reported enrollment rates by urban and rural deciles. The table here is a weighted average of those rates, based on weights from the 1988 FIES.

The regional distribution alone implies a particular incidence pattern for the benefits of public expenditures on primary and secondary education. This pattern, which is calculated on the basis of the regional income distribution data provided in Table 12, is provided in column 2 of Table 15. The next two columns show how this structure changes when utilization rates are taken into account. The first of the two columns combines the utilization rates in Table 13 for primary and secondary education. The second is derived from the fact that the decile-specific utilization rates differ between primary and secondary education--in particular, the lower utilization rates among poorer people is much more pronounced in secondary education than in primary.

Table 15. Benefit Incidence Based on Utilization Rates
(as a share of gross income)

Decile	No Adjustment	Adjustment based on average utilization rates	Adjustment based on different primary/secondary utilization rates
I	.325	.252	.289
II	.139	.105	.121
III	.109	.083	.096
IV	.089	.073	.081
V	.072	.063	.068
VI	.059	.052	.055
VII	.047	.041	.044
VIII	.036	.032	.034
IX	.026	.024	.025
X	.0005	.0005	.0005

Source: Author's calculations.

Not surprisingly, the incorporation of utilization rates dampens the progressive nature of educational benefits. However, the pattern is still strongly pro-poor, with the lowest decile receiving about a quarter of their income in benefits, and with the highest receiving nothing. Furthermore, insofar as primary expenditures

are the major redistributive element, and since primary utilization rates are more or less uniform across deciles, the resulting pattern is only slightly modified in the absence of utilization rates.

It is instructive to compare our estimates of the distribution of education and health expenditures in the Philippines with those obtained by van de Walle (1992) for the same two sectors in Indonesia. Indonesia's per capita income and stage of economic development are roughly similar to those of the Philippines; both are archipelagic nations; and the two countries have often been listed together as among the next generation of potential East Asian "tigers." Unlike our study, however, van de Walle's benefit incidence analysis draws heavily on access to public services and utilization rates. Hence, the two measures are not equivalent, but van de Walle's estimates come closest to providing us with an international comparison.

Table 16. Incidence of Educational and Health Expenditures in Indonesia
(as a percent of per capita household expenditures)

Decile	Education	Health
I	.19	.007
II	.16	.007
III	.14	.005
IV	.13	.006
V	.07	.006
VI	.07	.006
VII	.06	.007
VIII	.05	.006
IX	.04	.005
X	.03	.003

Source: van de Walle (1992).

The distribution of educational benefits in Indonesia closely mirrors the progressive pattern found in the Philippines. The incidence of health benefits is somewhat less progressive than in the Philippines, although health expenditures in the Philippines, too, are distributed more neutrally than are educational expenditures

(see Table 12). Van de Walle attributes the lack of progressivity in health expenditures in Indonesia to poor targeting--something that could be discerned only with data on access to public services by different income groups. To the extent that targeting may also be poor in the Philippines, our conclusion about progressive health expenditures should be qualified.

IV. Conclusions

In Table 17, we present the combined incidence of taxes and public expenditures in the Philippines. While this is nothing more than a consolidation of Tables 10 and 12, it tells a somewhat surprising story. The incidence pattern of taxes is basically neutral; it is the pattern of expenditures that drives the combined incidence, which is progressive.

Table 17. Net Incidence of Taxes and Public Expenditures Income-Based

Decile	Taxes	Expenditures	Net Incidence
I	0.208	0.469	-0.261
II	0.205	0.222	-0.017
III	0.201	0.175	0.026
IV	0.200	0.144	0.056
V	0.198	0.122	0.076
VI	0.199	0.102	0.097
VII	0.201	0.087	0.114
VIII	0.197	0.069	0.128
IX	0.197	0.051	0.146
X	0.196	0.0011	0.195

While we made numerous assumptions in reaching this conclusion, it is hard to imagine that a further refinement of the data would reverse the pattern discerned here. The neutrality of taxes stems from the fact that indirect taxes are only slightly regressive, something that cuts against the grain of previous studies of the

Philippines and elsewhere. The reason for this result is the simple but little-noted fact that while the poor consume taxed goods (like energy) directly, the rich consume them indirectly through their purchases of goods that require energy and other taxed goods in their production.

Our assumptions were particularly heroic on the expenditure side, where we used the regional distribution of public spending to infer the incidence of benefits. This was necessitated by our lack of data on access to public services by income groups. However, in one case for which we had such data--primary and secondary education--the incorporation of utilization rates into the analysis dampens the progressivity of expenditures, but only slightly.

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